AUDIO SYSTEMS

OWNER'S MANUAL

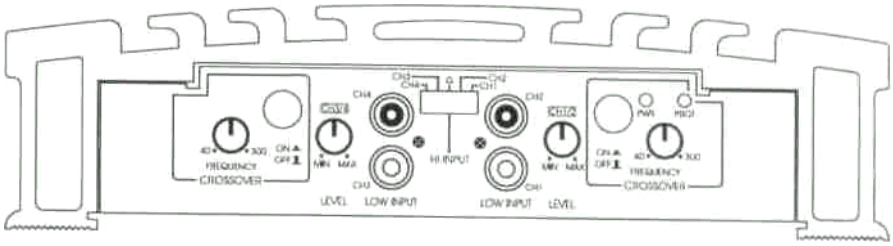
AVA-250 AVA-450
AVA-550 AVA-650
AVA-700 AVA-750
AVA-800

TRI-MODE
CAPABLE
SIMUTANEOUS
STEREO &
BRIDGED
OPERATIONS

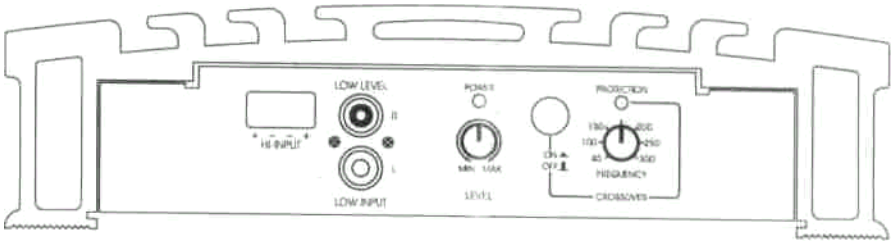
|CES98|

Thank you for purchasing a BOSS car audio amplifier, The BOSS amplifiers were engineered and designed in the U.S.A. to the highest quality level and will provide you with years of high quality sound level amplification and reproduction.

MODEL : AVA-650/800



MODEL : AVA-250/450/550/700/750



AMPLIFIER SPECIFICATIONS

Model	AVA-250	AVA-450	AVA-550	AVA-650	AVA-700	AVA-750	AVA-800
RMS Watts per Channel. 4 Ohms RMS Watts per Channel, 2 Ohms	60x2 90x2	75x2 110x2	100x2 150x2	75x4 110x4	150x2 225x2	200x2 350x2	100x4 150x4
Max Watts per Channel, 4 Ohms Bridgeoble Watts per Channel, 4 Ohms Slqnal to Noise Ratio Freauency	240 120x 1 90dB 9-50	320 160x1 90dB 9-50	420 210x1 90dB 9-50	1000 500x2 90dB 9-50	650 325x1 90dB 9-50	1200 600x1 90dB 9-50	1200 600x2 90dB 9-50
Distortion @RMS Watts Channel Separation Damping Factor	0.01% 90dB >100+	0.01% 90dB 100+	0.01% 90dB 100+	0.01% 90dB 125+	0.01% 90dB 125+	0.01% 90dB 125+	0.01% 90dB 125+

III BUILT-IN ELECTRONIC CROSSOVER **III**

All BOSS amplifiers features built-in electronic crossovers.
The crossover frequency is adjustable from 45Hz to 120HZ (LPF) and from 80HZ to 500HZ (HPF) at a 12dB octave slope. The crossover will now be in operation on both channels one and two.
(AVA-250/450/650/700/750/800)

All BOSS amplifiers have been designed with fully regulated 100% MOSFET power supplies assuring extremely quick switching response and self protection,

The output stages of all the BOSS amplifiers Implement discrete Darlington circuitry and were designed to reduce and eliminate unwanted harmonic distortion.

Model :AVA-250
D 240 Watt Bridgeable Power Amplifier
D Power Output Per Channel: 60 Watts RMS
D Two Channel Bridgeable Amplifier
D Heavy Duty Aluminum Alloy Heatsink Chassis
D Class A-B Operation
D Built-in Electronic Crossover Network Adjustable from 40Hz~300Hz
D Continuously Variable Input Gain Adjustment
D Gold Plated RCA, Low Level High Impedance Input
D WIre Harness, High Level Low Impedance Input
D Remote Turn-on/Turn-off Circuit
D MOSFET Pulse Width Modulated Power Supply
D 2 Ohm Stable Operation with Output Power Increase
D Soft Turn-on Circuit
D Thermal Overheat Protection
0 Speaker Short Circuit Protection
D Input Overload Protection
D LED Diagnostic Condition Indicator
D Automotive Style Protection Fuses
D Upright Easy Access Speaker And Power/Ground/Remote Connection Terminals
D Power On LED Indicator
D Dimensions: 9" 1/8(W) x 2" 3/8(H) x 5" 4/8(L)

Model:AVA-450

D 320 Watt Bridgeable Power Amplifier
D Power Output Per Channel: 75 Watts RMS
D Two Channel Bridgeable Amplifier
D Heavy Duty Aluminum Alloy Heatsink Chassis
D Class A-B Operation
D Built-in Electronic Crossover Network Adjustable from 40Hz~300Hz
D Continuously Variable Input Gain Adjustment
D Gold Plated RCA Low Level High Impedance Input
D Wire Harness, High Level Low Impedance Input
D Remote Turn-on/Turn-off Circuit
D MOSFET Pulse Width Modulated Power Supply
D 2 Ohm Stable Operation with Output Power Increase
D Soft Turn-on Circuit
D Thermal Overheat Protection
D Speaker Short Circuit Protection
D Input Overload Protection
D LED Diagnostic Condition Indicator
D Automotive Style Protection Fuses
D Upright Easy Access Speaker And Power/Ground/Remote Connection Terminals
D Power On LED Indicator
D Dimensions: 9" 1 /8(W) x 2" 3/8(H) x 8" 1 /4(L)

Model :AVA-550
D 420 Watt Bridgeable Power Amplifier
D Power Output Per Channel: 100 Watts RMS
DTwo Channel Bridgeable Amplifier
D Heavy Duty Aluminum Alloy Heatsink Chassis
D Class A-B Operation
D Built-in Electronic Crossover Network Adjustable from 40Hz~300Hz
D Continuously Variable Input Gain Adjustment
D Gold Plated RCA Low Level High Impedance Input
D Wire Harness, High Level Low Impedance Input
D Remote Turn-on/Turn-off Circuit
D MOSFET Pulse Width Modulated Power Supply
D 2 Ohm Stable Operation with Output Power Increase
D Soft Turn-on Circuit
D Thermal Overheat Protection
D Speaker Short Circuit Protection
D Input Overload Protection
D LED Diagnostic Condition Indicator
D Automotive Style Protection Fuses
D Upright Easy Access Speaker And Power/Ground/Remote Connection Terminals
D Power On LED Indicator
D Dimensions: 9" 1/8(W) x 2" 3/8(H) x 9" 7/8(L)

Model:AVA-650 D 1000 Wan Bridgeable Power Amplifier

D Power Output Per Channel: 75 Watts RMS
D Four Channel Bridgeable Amplifier
D Tri-Way Configuration: 75Watts Per Channel into Four Channels, 160 Watts Per Channel Into Two Channels, 75Watts Per Channel Into Two Channels plus 160 Watts into a Third Channel
D Heavy Duty Aluminum Alloy Heatsink Chassis D Class A-B Operation
D Built-in Electronic Crossover Network Adjustable from 40Hz~300Hz D Continuously Variable Input Gain Adjustment D Gold Plated RCA, Low Level High Impedance Input D Wire Harness, High Level Low Impedance Input D Remote Turn-on/Turn-off Circuit D MOSFET Pulse Width Modulated Power Supply D 2 Ohm Stable Operation with Output Power Increase D Soft Turn-on Circuit D Thermal Overheat Protection D Speaker Short Circuit Protection D Input Overload Protection D LED Diagnostic Condition Indicator D Automotive Style Protection Fuses
D Upright Easy Access Speaker And Power/Ground/Remote Connection Terminals D Power On LED Indicator D Dimensions: 9" 1/8(W) x 2" 3/8(H) x 13" 3/4(L)

Model:AVA-700
D 650 Watt Bridgeable Power Amplifier
D Power Output Per Channel: 150 Watts RMS
D Two Channel Bridgeable Amplifier
D Heavy Duty Aluminum Alloy Heatsink **Chassis**
D Class A-B Operation
D Built-in Electronic Crossover Network Adjustable from 40Hz~300Hz
D Continuously Variable Input Gain Adjustment
D Gold Plated RCA, Low Level High Impedance Input
D WIre Harness, High Level Low Impedance Input
D Remote Turn-on/Turn-off Circuit
D MOSFET Pulse Width Modulated Power Supply
D 2 Ohm Stable Operation with Output Power Increase
D Soft Turn-on Circuit
D Thermal Overheat Protection
D Speaker Short Circuit Protection
D Input Overload Protection
D LED Diagnostic Condition Indicator
D Automotive Style Protection Fuses
D Upright Easy Access Speaker And Power/Ground/Remote Connection Terminals
D Power On LED Indicator
D Dimensions: 9" 1 /8(W) x 2" 3/8(H) x 12" 13/16(L)

Model:AVA-750
D 800 Watt Bridgeable Power Amplifier
D Power Output Per Channel: 200 Watts RMS
DTwo Channel Bridgeable Amplifier
D Heavy Duty Aluminum Alloy Heatsink Chassis
D Class A-B Operation
D Built-in Electronic Crossover Network Adjustable from 40Hz~300Hz
D Continuously Variable Input Gain Adjustment
D Gold Plated RCA, Low Level High Impedance Input
D Wire Harness, High Level Low Impedance Input
D Remote Turn-on/Turn-off Circuit
D MOSFET Pulse Width Modulated Power Supply
D 2 Ohm Stable Operation with Output Power Increase
D Soft Turn-on Circuit
D Thermal Overheat Protection
D Speaker Short Circuit Protection
D Input Overload Protection
D LED Diagnostic Condition Indicator
D Automotive Style Protection Fuses
D Upright Easy Access Speaker And Power/Ground/Remote Connection Terminals
D Power On LED Indicator
D Dimensions: 9" 1/8(W) x 2" 3/8(H) x 17" 3/4(L)

Model :AVA-800
D 840 Watt Bridgeable Power Amplifier
D Power Output Per Channel: 100 Watts RMS
D Four Channel Bridgeable Amplifier
DTri-Way Configuration: 100 Watts Per Channel Into Four Channels, 220 Watts Per Channel into Two Channels, 100 Watts Per Channel Into Two Channels plus 220 Watts into a Third Channel
D Heavy Duty Aluminum Alloy Heatsink Chassis D Class A-B Operation
D Built-in Electronic Crossover Network Adjustable from 40Hz~300Hz D Continuously Variable Input Gain Adjustment D Gold Plated RCA, Low Level High Impedance Input D WIre Harness, High Level Low Impedance Input D Remote Turn-on/Turn-off Circuit D MOSFET Pulse Width Modulated Power Supply D 2 Ohm Stable Operation with Output Power Increase D Soft Turn-on Circuit D Thermal Overheat Protection D Speaker Short Circuit Protection D Input Overload Protection D LED Diagnostic Condition Indicator D Automotive Style Protection Fuses
D Upright Easy Access Speaker And Power/Ground/Remote Connection Terminals D power On LED Indicator D Dimensions: 9" 1/8(W) x 2" 3/8(H) x 15" 23/32(L)

III A FEW WORDS ABOUT PROTECTION CIRCUITRY III

The protection circuitry will disable the amplifier if it senses an input overload, speaker short circuit or extreme high temperature conditions. When the protection circuit Is in operation the LED Indicator on the panel of the unit will light Indicating that the amplifier has gone Into a self preservation mode. At this time please check your system to see what Is causing the protection circuit to fire. The amplifier can be reset by turning the remote power off and then on again. If the system shutdown because of a thermal overload condition, allow the amplifier to cool down before restarting. If the amplifier shutdown because of an input overload or speaker short circuit please be sure to correct these conditions before restarting the amplifier.

III AMPLIFIERS & 2-OHM OPERATION lll

AVA-250/450/550/650/700/750/800 All BOSS amplifiers were designed to operate efficiently at loads down to 2 ohms. What this means Is that you can do an installation of FOUR-8 ohm speakers per channel using parallel wiring or TWO-8 ohm speakers per channel in parallel. Increasing the number of woofers per channel at low frequencies up to 100 Hz produces
an acoustic coupling effect. This acoustic coupling increases your power output by 3 dB per speaker. This might not sound like a lot but to produce an additional 3 dB of music power should be the equivalent of adding an additional 10 watts to each speakeri

When operating at 2 ohms, the amplifiers increase their power output by approximately 50 percent. The current draw of the amplifiers will also increase by about the same amount. Be sure that you have enough current to run the amplifiers Into a 2 ohm load otherwise distorted music will be reproduced.

PLEASE NOTE:
The gain control of any car audio amplifier should not be mistaken for a volume control. It is a sophisticated device designed to match the output level of your source unit to the input level of the amplifier. Do not adjust the level to maximum unless your input level requires it. Not following this instruction will result in an input overload to the amplifier and high levels of distorted musical reproduction,

For speaker level Input. Simply wire the speaker output leads from your source to the Input of the amplifier. Make sure to wire the positive leads to the positive Inputs and the negative leads to the negative inputs.

III ELECTRICAL WIRING III

All BOSS amplifiers are equipped with easy top access screw terminals. These terminals are 14 K Gold Plated to insure excellent electrical contact and to resist corrosion. See FIGURE I for electrical Installation of all amplifiers. We suggest using at least 8 gauge wire for the power and ground connections. Wire the amplifier directly to the car battery. For the ground connection use the shortest possible wire to a good chassis ground point. Wire the Remote connection to auto start lead of your equalizer or power antenna.

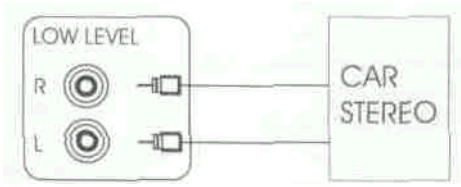
III POWER FUSE III

Power fuses protects both this amplifier and the automobile electrical system from wrong conditions. The fuse is a standard automotive type. The capacity is each Model current requirement is different. Replace only with same current rating fuse otherwise damage or fire can result.

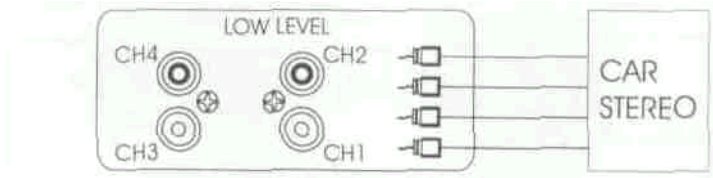
III MOUNTING III

Mark the locations for the mounting screw holes by holding the AMPLIFIER in place and using a scribe or one of the mounting screws inserted in each mounting hole in turn to mark the mounting surface. If the mounting surface is carpeted, measure the hole centers and mark with a felt-tip pen.
Drill pilot holes for the mounting screws into the holes of the system insert the mounting screws into the holes and tighten them securely

LOW INPUT WIRING MODEL: AVA-250/450/550/700/750

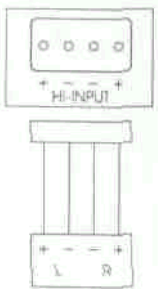


MODEL:AVA-650/800



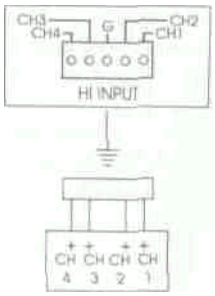
LH!GJ±INPUTWIRING

MODEL: AVA-250/450/550/700/750



CAR STEREO

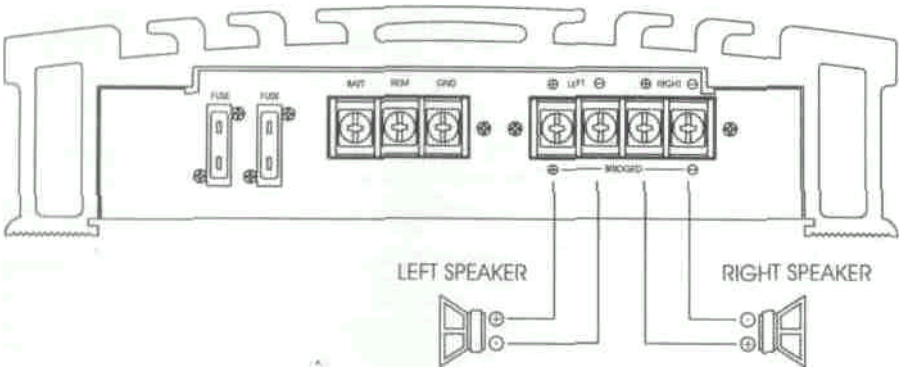
MODEL:AVA-650/800



CAR STEREO

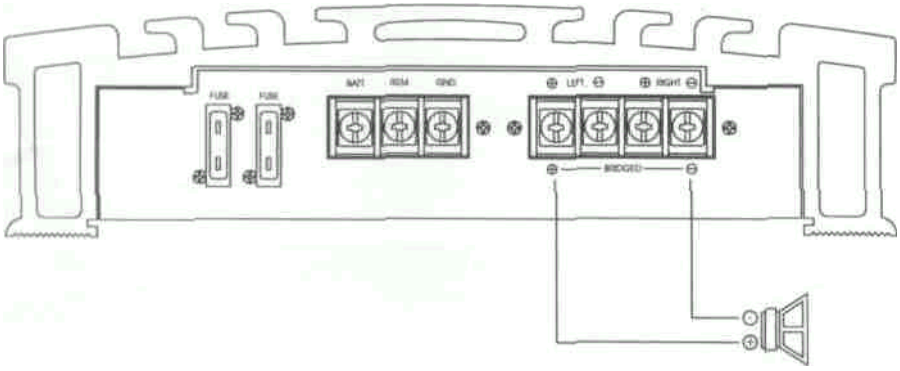
III 2 SPEAKERS WIRING III

MODEL : AVA-250/450/550/700/750



III BRIDGED SPEAKERS WIRING

MODEL : AVA-250/450/550/700/750

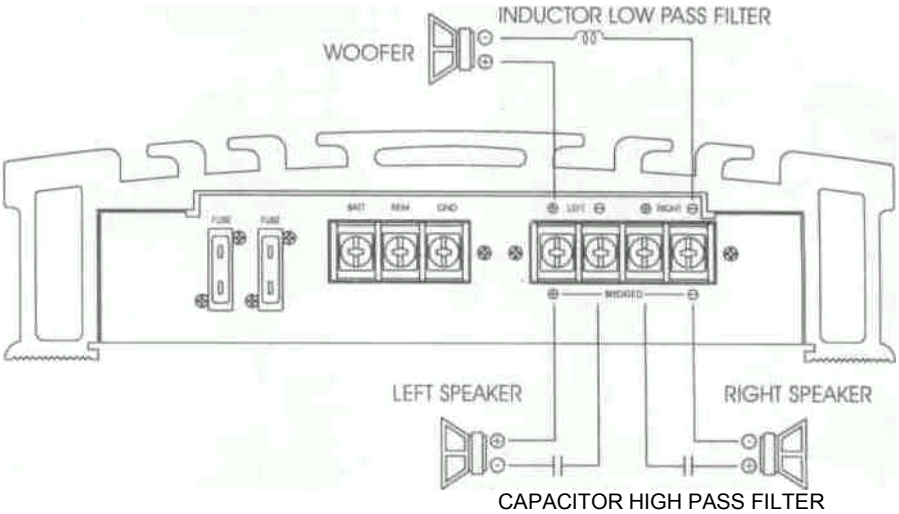


CONNECT THE NEGATIVE SPEAKER TERMINAL TO THE NEGATIVE TERMINAL OF R-CHANNEL ON THE AMPLIFIER CONNECT THE POSITIVE SPEAKER TERMINAL OF L-CHANNEL ON THE AMPLIFIER

III TRI WAY SPEAKERS WIRING **III**

TRI MODE OPERATIONAL OUTPUT allows a Crossover (Subwoofer) to be operated in MONO mode while the main speakers are playing in Stereo. Leave the Crossover (Subwoofer) switch on "Full" position. Use a 100 Volt, non-polar capacitor tor a high pass crossover and a wire coil (inductor) to block high frequencies from the Crossover (Subwoofer) as shown In the figure below, Capacitor and inductor values as written in the below determine the crossover frequencies. The front and rear channels of this amplifier have this capability. Only the rear left and right channels are shown below.

MODEL : AVA-250/450/550/700/750



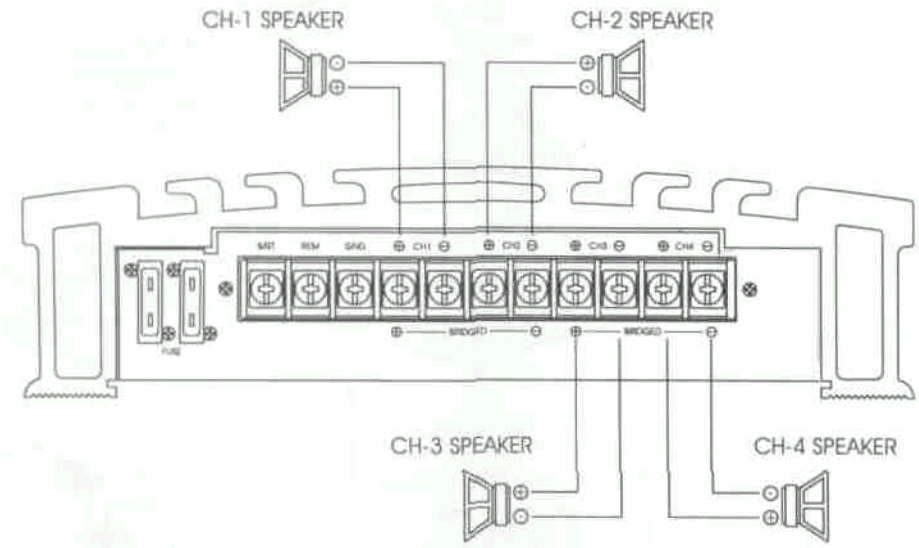
CAPACITOR HIGH PASS FILTER

COMPONENT VALUES FOR 6 dB PASSIVE CROSSOVER

FREQUENCY	INDUCTOR	CAPACITOR
80 Hz	7.5mH	470 uF
100 Hz	6,5 mH	330 uF
120 Hz	5,5 mH	330 uF
150 Hz	4mH	220 uF

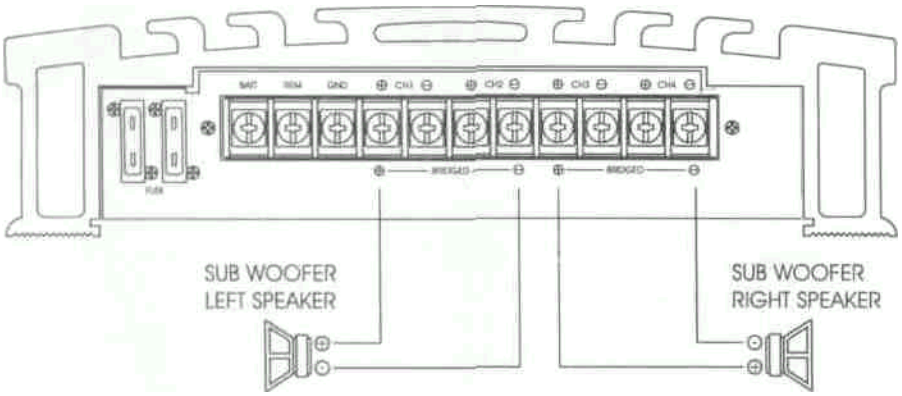
III 4 SPEAKERS WIRING 4 CHANNEL

MODEL : AVA-650/800



III BRIDGED SPEAKERS WIRING

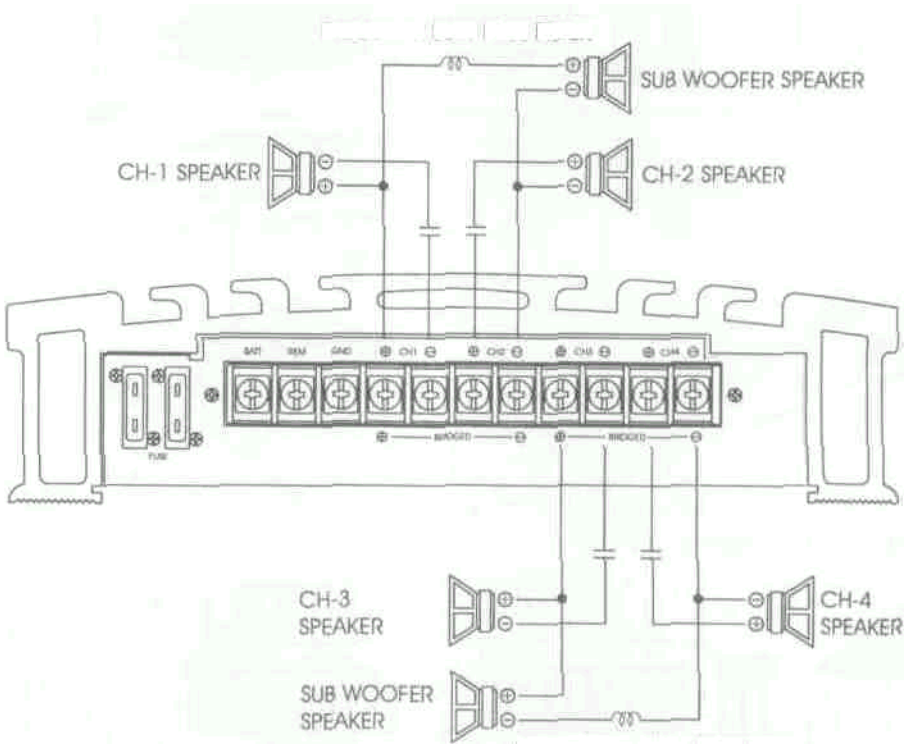
MODEL : AVA-650/800



III TRI WAY SPEAKERS WIRING

MODEL : AVA-650/800

INDUCTOR LOW PASS FILTER



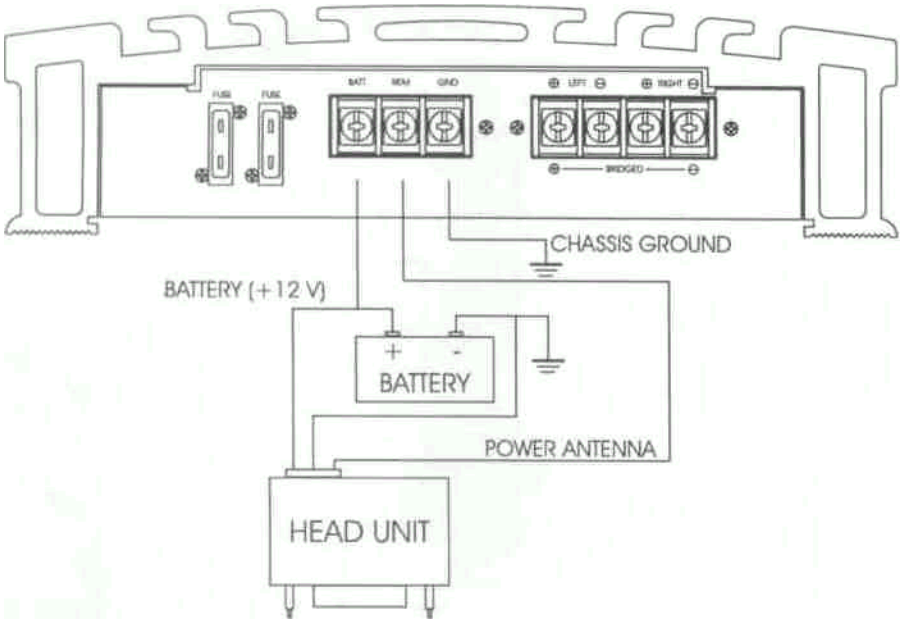
CAPACITOR HIGH PASS FILTER

COMPONENT VALUES FOR 6 dB PASSIVE CROSSOVER

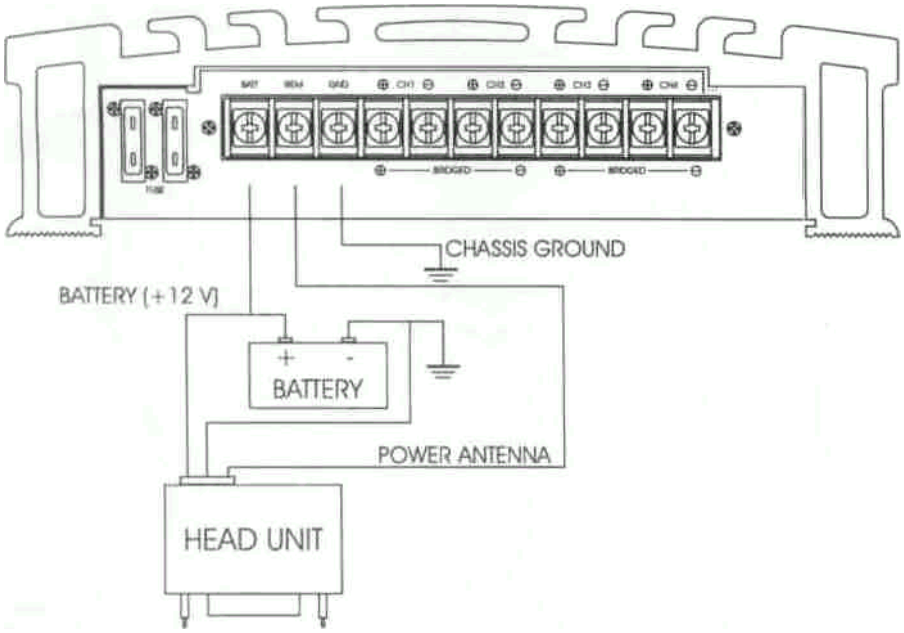
FREQUENCY	INDUCTOR	CAPACITOR
80 Hz	7.5mH	470 UF
100 Hz	6.5 mH	330 uF
120 Hz	5.5 mH	330 uF
150 Hz	4mH	220 uF

III POWER WIRING **III**

MODEL ; AVA-250/450/550/700/750



MODEL : AVA-650/800



III WARNINGS **III**

Investigate the layout of your automobile thoroughly before drilling or cutting any holes, Take care when you work near the gas tanks, lines or hydraulic lines, and electrical wiring.
Dont use power amplifier unmounted. Attach this system securely to the automobile to prevent damage, particularly in the event of am accident.
Dont mount this system so that the wire connections are unprotected or are subject to pinching of damage from nearby objects.
The +12DC power wire must be fused at the battery positive terminal connection. Before making or breaking power connections at this system power terminals, disconnect the +12V wire at the battery end. Confirm your radio/cassette player and/or other equip Is turned off while connecting the input jacks and speaker terminals.
If you need to replace the power fuse replace It only with fuse Identical to that supplied with the system. Using a fuse of different type or rating may result In damage to this system which isnt covered by the warranty.

III TROUBLE SHOOTING **III**

Before removing your Amplifier, refer to list bellow and follow suggested procedure. Speaker and their wires be tested first.

No Output:

a, Confirm that all terminal strip connections are firmly connected.
b. Check in-line and built-in fuses. Both "+ 12V" and "RMT" terminals must **have + 12 Volts** to chassis ground,
c. Confirm that signal source *[Car Radio/deck. EQ, X-over etc.)* is connected and is supplying output signal.
To confirm that Amplifier only *[Do not connect the other end of the patch cord].* Briefly tap the center pin of each *[disconnected)* RCA plug on the other *[disconnected)* end with your finger. This should produce a noise *[feedback)* in the speakers.

Only One Channel Works:

a. Confirm that speaker terminal strip connections are firmly connected. b. Check "BALANCE" control on Car Stereo *(or signal source)* to verify It Is at mid-point. c. If using RCA Low-level Input, reverse the Input plugs at the Amplifier *(right to left or vice* verse).
If the channel that Is silent reverses position, the problem Is In the Car StereofEQ, *X-over,* or other signal source) or connecting cable.

Weak Output

a. Check Input Sensitivity control adjustment,

Noise in Audio

a. If noise Is a "whine" that goes up and down with engine, confirm that Amplifier and any other sources unit *(Radio, EQ, X-over etc.). is properly grounded.* b. A "clicking" or "popping" noise at a rate that follow engine speed is generally Confirm that the vehicle is equipped with resistor plugs and plug wires. Or, ignition system may need service. c. Speaker and input wires should not be routed next to wires that interconnect light and other accessories/equipment. d, If above steps do not Improve/clear noise Interference, the system should be checked **by a** professional mobile audio Installer.